REMARKS/ARGUMENTS

Claims 1, 6, 9, 11 and 12 remain in this application. Claims 4 and 5 have been canceled.

Claims 1, 6, 11 and 12 have been amended. Antecedent support for the amendments is found on page 5, lines 20-24; page 9, lines 10 and 11; and page 6, lines 4-8.

The Examiner has rejected Claims 1, 4, 6, 9, 11, and 12 as being unpatentable over Klink in view of Gruber. Applicants respectfully traverse this rejection.

Referring to Klink, there is disclosed a method for examining the connectivity of links in MPLS networks. Klink teaches that MPLS-OAM packet flow is formed from MPLS-OAM packets that are inserted into the usual dataflow at the start of a segment and can be removed from this again at the end of the segment. They can be recorded and edited along the connection LSP, at the connection points, without intervention into the transmission process. See paragraph 24.

Before MPLS-OAM packets can be transmitted via the MPLS a network, the endpoints of the associated MPLS-OAM segment must be defined. The definition of source and sink from MPLS-OAM segment is not necessarily permanently specified for the duration of the connection. This means that the relevant segment can be reconfigured, for example by fields in the signaling protocol. See paragraph 25.

For monitoring of the connectivity of an MPLS connection LSP, special MPLS-OAM packets, referred to as OAM-ECHO packets, are defined. The MPLS-OAM packets are provided

with a special label. The OAM-ECHO packets formed in this way are inserted into the flow of useful information. See paragraph 31.

Klink teaches a characteristic of the ECHO function is that a single OAM-ECHO packet sent in the source (downstream) sends back a plurality of packets as an answer, and in fact a packet for each connection point in a node through which the assigned connection LSP is routed. See paragraph 32. The ECHO function is a very useful means of checking where there is a requirement for connectivity of a connection LSP in an MPLS network. The complete network can be checked for connectivity before an MPLS network is brought into service, or special connections can be checked through in the event of a complaint by a customer. See paragraph 34.

Each further connection point connected to the sink forwards the OAM-ECHO packet further in the direction of the sink and at the same time generates a copy of it. The copies generated at the connection points are then further processed. See paragraph 36. First, the bit in the information part of the packet that designates the direction of transmission is changed from downstream to upstream. A location identifier is also entered in the information part of the OAM-ECHO packet. This is representative of the nodes of the MPLS code node wherein the processing was carried out. The location identifier also gives the assigned connection points. The subsequent further processing of the packet code depends on whether a bidirectional or unidirectional mode is to be used. See paragraph 37. In the case of the unidirectional mode, no feedback channel is necessary and the copy packet is stored in the MPLS node. The packets are then collected from all the MPLS nodes via signaling protocols and sent back to the source. In the case of a bidirectional mode, a feedback channel for the assigned connection LSP is necessary to send back the copy OEM-ECHO packet to the source where it was originally inserted. See paragraph 39.

In regard to Claim 1 of applicants, there is the limitation of "the OAM path matrix disposed at each node which identifies the connection points and the fault management and performance monitoring conditions". It is respectfully submitted that Klink does not teach or suggest placing this limitation.

Furthermore, there is the limitation of "software for determining an OAM path matrix disposed at each node which identifies the connection points and fault management and performance monitoring conditions." It is respectfully submitted that paragraphs 36 and 37 of Klink, which the Examiner cites as teaching the limitation of Claim 1, not only does not teach an OAM path matrix, but does not teach any type of path matrix which identifies the connection points and fault management and performance monitoring conditions, nor software for determining the same. All of these three types of information are required to be present in the path matrix of the invention of Claim 1. Paragraphs 36 and 37 are silent about including all these three types of information in any type of memory let alone in an OAM path matrix. Furthermore, there is no teaching of software for determining the OAM path matrix is a structure which stores the connection points and the fault management and performance monitoring conditions, nor of "the OAM matrix maintaining OAM configurations during times of reroute, reset, fail over or reboots to reestablish the OAM configuration."

Referring to Gruber, there is disclosed a method of tracing the root of virtual connections. Gruber teaches that it is directed to tracing the route of a virtual connection between two nodes in a network, using trace cells, test cells or specially defined OAM fault management cells. See column 1, lines 15-20. Gruber teaches that tracing of the route is required for three reasons: to generate a record of the connection route in terms of the identities of the nodes and network elements in the route; to verify that the trace record matches the provisioning database record of the connection, and to update the database if desired and to fault locate a misroute, that is,

determine the network elements, node and link where a misroute has occurred. Gruber teaches that one object is to identify nodes in a network through which a connection is routed. Another object is to provide a method of tracing nodes in a network by using a trace cell. Yet another object of Gruber is to provide a method of managing a network by tracing nodes through which a connection is routed. See column 1, lines 42-63.

Gruber teaches an ATM virtual connection is created between two nodes through the use of VPI/VCI. An ATM virtual connection between two endpoints is shown by 10 in an ATM network 12. The connection is made of one or more ATM links and ATM segments. It is important to be able to trace an ATM virtual connection by identifying ATM nodes through which the connection is held. See column 3, lines 2-10. For this purpose, Gruber teaches a special function cell is created which carries a protocol field to indicate the trace function, link count in the identification of a node when the trace cell is looped back, and the identification of a node which initiated the trace function. The OAM cell specified by the ATM forum is used for the loopback function. See column 3, lines 19-25.

Gruber teaches to trace ATM nodes in a virtual connection a node a sends an ATM trace cell in the downstream direction. Nodes downstream from node a decrement the link count field by one and check if the link count field equals zero. If it is zero, the node writes its identity into the trace cell loopback location ID field, decrements the loop indication bit and loops back the trace cell. If the link count field is greater than zero the trace cell is forwarded downstream; if it is less than zero, the trace cell is discarded if the decremented link count field is greater than zero at an endpoint the cell is also discarded. A node a performs the steps for all links thereby obtaining loopbacks and hence node identities from all nodes along the connection route.

The Examiner cites column 4, lines 40-47 as teaching the limitation of "an OAM path matrix disposed at each node which identifies the connection point and fault management and performance monitoring conditions". Referring specifically to column 4, lines 40-47, Gruber teaches that node a is a node from which the tracing is carried out. If the monitoring node is one of the connecting points of the virtual connection, a trace cell is sent to both nodes in two different directions. That is all that Gruber teaches at column 4, lines 40 - 47. In fact, this teaching reinforces the overall teaching of Gruber which is that there is only a single node that identifies the connection points. In contrast, applicants' claimed invention has the limitation that each node has software that determines the OAM path matrix which identifies the connection points and fault management and performance monitoring conditions.

It is respectfully submitted the Examiner goes further from this teaching and states that this capability can occur at any node and it is thus a functionality capable at each node within the network, even though it goes specifically against any such teaching or suggestion in the applied art a record. It is further respectfully submitted that this is clearly a statement based on hindsight to try to arrive at applicants' claimed invention, ignoring the context of the teachings in which they are found.

This limitation of applicants' claimed invention is representative of the overall purpose of applicants' claimed invention, which is distinct from the applied art of record.

Not only does Gruber fail to teach software for determining the OAM path matrix disposed at each node, but Klink as well as Gruber fails to teach or suggest the OAM matrix for placing connection points along the path through which the connection is established each time after signaling from the first node to the second node returns to the first node, as found in Claim 1. All the teachings of Klink have to do with what happens after the connection is successfully

established. Klink specifically states that after a connection has been successfully established, the flow of information now takes place between user TLN 1 and user TLN 2, which is formed as a plurality of the MPLS packets carrying useful information. See paragraph 19.

It is respectfully submitted, and reiterated, neither Klink nor Gruber teach or suggest, or really have anything at all to do with the limitation "software for determining an OAM matrix for placing connection points along the path through which the connection is established each time after signaling from the first node to the second node returns to the first node, the OAM matrix creates fault management and performance monitoring conditions in the first, second and intermediate nodes, the OAM path matrix disposed at each node". It is respectfully submitted the Examiner is reading these limitations into the applied art of record, where they are not there. Specifically, the Examiner cites paragraph 37 and paragraph 39 for support for the aforesaid limitation in Claim 1.

Referring to paragraph 37 of Klink, it simply states that the bit in the information part of the packet that designates the direction of transmission is changed from downstream to upstream. A location identifier is also entered in the information part of the OAM-Echo packets. This is representative of the nodes of the MPLS node where the processing was carried out. The location identifier also gives the assigned connection point. Thus, there is no placement of connection points along the path in paragraph 37. The only placement is in the location identifier of the packets which gives the assigned connection point; there is nothing about placing the connection point along the path through which the connection is established, as found in Claim 1.

In regard to paragraph 39, it simply states that a feedback channel for the assigned connection LSP is necessary to send back the copied OAM-Echo packet to the source where it was originally inserted. Paragraph 39 has nothing at all to do with an OAM matrix for placing

connection points along the path each time after signaling from the first node to the second returns to the first node, as found in Claim 1. All that Claim 39 says is that there is a feedback channel for the assigned connection LSP which is necessary to send back the copied OAM-Echo packet to the source. Paragraph 39, just as well as paragraph 37, and in fact, all of the applied art of record is completely silent about placing connection points along the path through which the connection is established each time after signaling.

Additionally, the applied art of record does not teach or suggest "the OAM matrix maintaining OAM configurations during times of reroute, reset, fail over or reboots to reestablish the OAM configuration."

Accordingly, Claim 1 is patentable over the applied art of record.

Claim 6 is patentable for the reasons Claim 1 is patentable. Claim 9 is dependent to parent Claim 6 and is patentable for the reasons Claim 6 is patentable. Claims 11 and 12 are patentable for the reasons Claim 1 is patentable.

In view of the foregoing amendments and remarks, it is respectfully requested that the outstanding rejections and objections to this application be reconsidered and withdrawn, and Claims 1, 4-6, 9, 11 and 12, now in this application be allowed.

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I hereby certify that this correspondence is being deposited with the U.S. Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on

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